



SEQUENCE LISTING

<110> Whitt, Michael
<120> RECOMBINANT MUTANTS OF RHABDOVIRUS AND METHODS OF USE THEREO
<130> P-3558-US
<140> 10/656,894
<141> 2003-09-08
<160> 23
<170> PatentIn version 3.1
<210> 1
<211> 229
<212> PRT
<213> Vesicular stomatitis virus
<400> 1

Met Ser Ser Leu Lys Lys Ile Leu Gly Leu Lys Gly Lys Gly Lys Lys
1 5 10 15

Ser Lys Lys Leu Gly Ile Ala Pro Pro Pro Tyr Glu Glu Asp Thr Ser
20 25 30

Ala Glu Tyr Ala Pro Ser Ala Pro Ile Asp Lys Ser Tyr Phe Gly Val
35 40 45

Asp Glu Met Asp Thr Tyr Asp Pro Asn Gln Leu Arg Tyr Glu Lys Phe
50 55 60

Phe Phe Thr Val Lys Met Thr Val Arg Ser Asn Arg Pro Phe Arg Thr
65 70 75 80

Tyr Ser Asp Val Ala Ala Ala Val Ser His Trp Asp His Met Tyr Ile
85 90 95

Gly Met Ala Gly Lys Arg Pro Phe Tyr Lys Ile Leu Ala Phe Leu Gly
100 105 110

Ser Ser Asn Leu Lys Ala Thr Pro Ala Val Leu Ala Asp Gln Gly Gln
115 120 125

Pro Glu Tyr His Thr His Cys Glu Gly Arg Ala Tyr Leu Pro His Arg
130 135 140

Met Gly Lys Thr Pro Pro Met Leu Asn Val Pro Glu His Phe Arg Arg
145 150 155 160

Pro Phe Asn Ile Gly Leu Tyr Lys Gly Thr Ile Glu Leu Thr Met Thr
165 170 175

Ile Tyr Asp Asp Glu Ser Leu Glu Ala Ala Pro Met Ile Trp Asp His
180 185 190

Phe Asn Ser Ser Lys Phe Ser Asp Phe Arg Glu Lys Ala Leu Met Phe
195 200 205

Gly Leu Ile Val Glu Lys Lys Ala Ser Gly Ala Trp Val Leu Asp Ser
210 215 220

Ile Ser His Phe Lys
225

<210> 2
<211> 229
<212> PRT
<213> Vesicular stomatitis virus

<400> 2

Met Ser Ser Leu Lys Lys Ile Leu Gly Leu Lys Gly Lys Gly Lys Lys
1 5 10 15

Ser Lys Lys Leu Gly Ile Ala Pro Pro Pro Tyr Glu Glu Asp Thr Ser
20 25 30

Met Glu Tyr Ala Pro Ser Ala Pro Ile Asp Lys Ser Tyr Phe Gly Val
35 40 45

Asp Glu Ala Asp Thr Tyr Asp Pro Asn Gln Leu Arg Tyr Glu Lys Phe
50 55 60

Phe Phe Thr Val Lys Met Thr Val Arg Ser Asn Arg Pro Phe Arg Thr
65 70 75 80

Tyr Ser Asp Val Ala Ala Ala Val Ser His Trp Asp His Met Tyr Ile
85 90 95

Gly Met Ala Gly Lys Arg Pro Phe Tyr Lys Ile Leu Ala Phe Leu Gly
100 105 110

Ser Ser Asn Leu Lys Ala Thr Pro Ala Val Leu Ala Asp Gln Gly Gln
115 120 125

Pro Glu Tyr His Thr His Cys Glu Gly Arg Ala Tyr Leu Pro His Arg

130 135 140
 Met Gly Lys Thr Pro Pro Met Leu Asn Val Pro Glu His Phe Arg Arg
 145 150 155 160
 Pro Phe Asn Ile Gly Leu Tyr Lys Gly Thr Ile Glu Leu Thr Met Thr
 165 170 175
 Ile Tyr Asp Asp Glu Ser Leu Glu Ala Ala Pro Met Ile Trp Asp His
 180 185 190
 Phe Asn Ser Ser Lys Phe Ser Asp Phe Arg Glu Lys Ala Leu Met Phe
 195 200 205
 Gly Leu Ile Val Glu Lys Lys Ala Ser Gly Ala Trp Val Leu Asp Ser
 210 215 220
 Ile Ser His Phe Lys
 225
 <210> 3
 <211> 229
 <212> PRT
 <213> Vesicular stomatitis virus
 <400> 3
 Met Ser Ser Leu Lys Lys Ile Leu Gly Leu Lys Gly Lys Gly Lys Lys
 1 5 10 15
 Ser Lys Lys Leu Gly Ile Ala Pro Pro Pro Tyr Glu Glu Asp Thr Ser
 20 25 30
 Met Glu Tyr Ala Pro Ser Ala Pro Ile Asp Lys Ser Tyr Phe Gly Val
 35 40 45
 Asp Glu Met Asp Thr Tyr Asp Pro Asn Gln Leu Arg Tyr Glu Lys Phe
 50 55 60
 Phe Phe Thr Val Lys Met Thr Val Arg Ser Asn Arg Pro Phe Arg Thr
 65 70 75 80
 Tyr Ser Asp Val Ala Ala Ala Val Ser His Trp Asp His Met Tyr Ile
 85 90 95
 Gly Met Ala Gly Lys Arg Pro Phe Tyr Lys Ile Leu Ala Phe Leu Gly
 100 105 110

Ser Ser Asn Leu Lys Ala Thr Pro Ala Val Leu Ala Asp Gln Gly Gln
115 120 125

Pro Glu Tyr His Ala His Cys Glu Gly Arg Ala Tyr Leu Pro His Arg
130 135 140

Met Gly Lys Thr Pro Pro Met Leu Asn Val Pro Glu His Phe Arg Arg
145 150 155 160

Pro Phe Asn Ile Gly Leu Tyr Lys Gly Thr Ile Glu Leu Thr Met Thr
165 170 175

Ile Tyr Asp Asp Glu Ser Leu Glu Ala Ala Pro Met Ile Trp Asp His
180 185 190

Phe Asn Ser Ser Lys Phe Ser Asp Phe Arg Glu Lys Ala Leu Met Phe
195 200 205

Gly Leu Ile Val Glu Lys Lys Ala Ser Gly Ala Trp Val Leu Asp Ser
210 215 220

Ile Ser His Phe Lys
225

<210> 4
<211> 229
<212> PRT
<213> Vesicular stomatitis virus

<400> 4

Met Ser Ser Leu Lys Lys Ile Leu Gly Leu Lys Gly Lys Gly Lys Lys
1 5 10 15

Ser Lys Lys Leu Gly Ile Ala Pro Pro Pro Tyr Glu Glu Asp Thr Ser
20 25 30

Met Glu Tyr Ala Pro Ser Ala Pro Ile Asp Lys Ser Tyr Phe Gly Val
35 40 45

Asp Glu Met Asp Thr Tyr Asp Pro Asn Gln Leu Arg Tyr Glu Lys Phe
50 55 60

Phe Phe Thr Val Lys Met Thr Val Arg Ser Asn Arg Pro Phe Arg Thr
65 70 75 80

Tyr Ser Asp Val Ala Ala Ala Val Ser His Trp Asp His Met Tyr Ile

85

90

95

Gly Met Ala Gly Lys Arg Pro Phe Tyr Lys Ile Leu Ala Phe Leu Gly
 100 105 110

Ser Ser Asn Leu Lys Ala Thr Pro Ala Val Leu Ala Asp Gln Gly Gln
 115 120 125

Pro Glu Tyr His Thr His Cys Glu Gly Arg Ala Tyr Leu Pro His Arg
 130 135 140

Met Gly Lys Thr Pro Pro Met Leu Asn Val Pro Glu His Phe Arg Arg
 145 150 155 160

Pro Phe Asn Ile Gly Leu Tyr Lys Gly Thr Ile Glu Leu Thr Met Thr
 165 170 175

Ile Tyr Asp Asp Glu Ser Leu Glu Ala Ala Pro Met Ile Trp Asp His
 180 185 190

Phe Asn Ser Ser Lys Phe Ser Asp Phe Arg Glu Lys Ala Leu Met Phe
 195 200 205

Gly Leu Ile Val Glu Lys Lys Ala Ser Gly Ala Trp Val Leu Asp Ser
 210 215 220

Ile Gly His Phe Lys
 225

<210> 5
 <211> 690
 <212> DNA
 <213> Vesicular stomatitis virus

<400> 5
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 gggatcgcac cacccttcta tgaagaggac actagcgctg agtatgctcc gagcgctcca 120
 attgacaaat cctatcttgg agttgacgag gctgacacct atgatccgaa tcaattaaga 180
 tatgagaaat tcttctttac agtgaaaatg acggttagat ctaatcgtcc gttcagaaca 240
 tactcagatg tggcagccgc tgtatcccat tgggatcaca tgtacatcgg aatggcaggg 300
 aaacgtccct tctacaaaat cttggctttt ttgggttctt ctaatctaaa ggccactcca 360
 gcggtattgg cagatcaagg tcaaccagag tatcacgctc actgcgaagg cagggcttat 420
 ttgccacata ggatggggaa gaccctccc atgctcaatg taccagagca cttcagaaga 480

ccattcaata taggtcttta caagggaaacg attgagctca caatgaccat ctacgatgat	540
gagtcactgg aagcagctcc tatgatctgg gatcatttca attcttccaa attttctgat	600
ttcagagaga aggccttaat gtttggcctg attgtcgaga aaaaggcatc tggagcgtgg	660
gtcctggact ctatcggcca cttcaaatga	690

<210> 6
 <211> 42
 <212> PRT
 <213> Vesicular stomatitis virus

<400> 6

Phe	Glu	His	Pro	His	Ile	Gln	Asp	Ala	Ala	Ser	Gln	Leu	Pro	Asp	Asp
1				5					10					15	

Glu	Ser	Leu	Phe	Phe	Gly	Asp	Thr	Gly	Leu	Ser	Lys	Asn	Pro	Ile	Ala
			20					25					30		

Leu	Val	Glu	Gly	Trp	Phe	Ser	Ser	Trp	Lys
		35					40		

<210> 7
 <211> 42
 <212> PRT
 <213> Vesicular stomatitis virus

<400> 7

Phe	Glu	His	Pro	His	Ile	Gln	Asp	Ala	Ala	Ser	Gln	Leu	Pro	Asp	Asp
1				5					10					15	

Glu	Ser	Leu	Phe	Phe	Gly	Asp	Thr	Gly	Leu	Ser	Lys	Asn	Pro	Ile	Glu
			20					25					30		

Leu	Val	Glu	Asp	Trp	Phe	Ser	Ser	Trp	Lys
		35					40		

<210> 8
 <211> 42
 <212> PRT
 <213> Vesicular stomatitis virus

<400> 8

Phe	Glu	His	Pro	His	Ile	Gln	Asp	Ala	Ala	Ser	Gln	Leu	Pro	Asp	Asp
1				5					10					15	

Glu	Ser	Leu	Phe	Phe	Gly	Asp	Thr	Gly	Leu	Ser	Lys	Asn	Pro	Ile	Glu
			20					25					30		

Leu Val Glu Gly Ala Phe Ser Ser Trp Lys
35 40

<210> 9
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 9

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Gly Trp Ala Ser Ser Trp Lys
35 40

<210> 10
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 10

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Gly Trp Phe Ser Ser Ala Lys
35 40

<210> 11
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 11

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Gly Trp Phe Ser Ser Trp Lys
35 40

<210> 12
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 12

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Ala Trp Phe Ser Ser Ala Lys
35 40

<210> 13
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 13

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Ala Ala Phe Ser Ser Ala Lys
35 40

<210> 14
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 14

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Asp Ala Phe Ser Ser Ala Lys
35 40

<210> 15
<211> 35
<212> PRT

<213> Vesicular stomatitis virus

<400> 15

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Lys Ser Ser
35

<210> 16

<211> 32

<212> PRT

<213> Vesicular stomatitis virus

<400> 16

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Pro Ile Glu Leu Val Gly Gly Trp Phe Ser Ser Trp Lys
20 25 30

<210> 17

<211> 54

<212> PRT

<213> Vesicular stomatitis virus

<400> 17

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Gly Trp Phe Ser Ser Trp Lys Ser Ser Ser Pro Asn Lys
35 40 45

Gly Ser Gly Thr Thr Ser
50

<210> 18

<211> 45

<212> PRT

<213> Vesicular stomatitis virus

<400> 18

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Lys Ser Ser Ser Pro Asn Lys Gly Ser Gly Thr Thr Ser
35 40 45

<210> 19
<211> 6
<212> PRT
<213> Vesicular stomatitis virus

<400> 19

Phe Phe Gly Asp Thr Gly
1 5

<210> 20
<211> 29
<212> PRT
<213> Vesicular stomatitis virus

<400> 20

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Lys
20 25

<210> 21
<211> 53
<212> PRT
<213> Vesicular stomatitis virus

<400> 21

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ile Glu
20 25 30

Leu Val Glu Gly Trp Phe Ser Ser Trp Lys Ser Ser Ser Thr Val Ile
35 40 45

His Ala Asp Asn Pro
50

<210> 22
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 22

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ala Ser
 20 25 30

Ser Phe Trp Gly Glu Val Leu Glu Ile Lys
 35 40

<210> 23
<211> 42
<212> PRT
<213> Vesicular stomatitis virus

<400> 23

Phe Glu His Pro His Ile Gln Asp Ala Ala Ser Gln Leu Pro Asp Asp
1 5 10 15

Glu Ser Leu Phe Phe Gly Asp Thr Gly Leu Ser Lys Asn Pro Ala Ser
 20 25 30

Ser Phe Ala Gly Glu Val Leu Glu Ile Lys
 35 40